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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : F24C 7/08, 15/02 — A1

(11) International Publication Number: WO 97/26486

(43) International Publication Date: 24 July 1997 (24.07.97)

(21) International Application Number: PCT/DK97/00027

(22) International Filing Date: 20 January 1997 (20.01.97)

(30) Priority Data:
0055/96 19 January 1996 (19.01.96) DK

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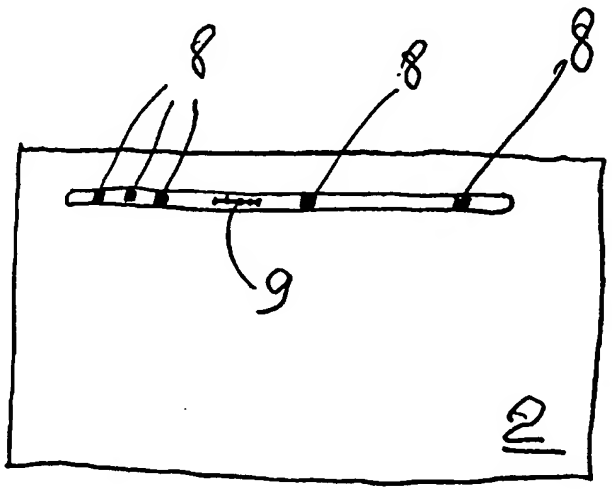
(81) Designated States: AL, AM, AT, AT (Utility model), AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published
With international search report.

(54) Title: A CONTROL DEVICE FOR A DOMESTIC OVEN

(57) Abstract

Controls for ovens and cooking ranges are traditionally rotary knobs or electronic controls embedded in the outer surface of the equipment. According to the invention, the controls are fitted into the handle for the door of an oven, e.g. by providing rotary controls at the extremities of a rod-shaped handle or by push-actuators along the rod. The electrical contact is made by means of a cable through the hinges or by multipoint connectors which are only active when the door is closed which provides additional safety features. In the latter case, the entire door may be removed without the need for separation of the electrical circuit.



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A control device for a domestic oven.

The invention relates to a control device, in particular a signal input device for the functions of an oven for the preparation of food.

Most controls for ovens and cooking ranges were traditionally rotary knobs which directly acted on the supply of energy, e.g. electrical power or gas as in a switch or tap. With the advent of remote control by electrical signal it became possible to place the controls independently of the actual switches, i.e. there is no longer any need for a mechanical linkage from the manual actuating device to the switch or tap. Electronic solutions are now used, and their greatest limitation is that some parts will be placed in heated areas which reduces the lifetime of electronic components. It is also now desired to have a still greater freedom in the placement of controls, and this is obtained by using a data bus structure connecting a control signal input device, such as a knob, touch switch, proximity switch or the like, to the energy controller and also the thermostats used for ovens and cooking plates.

It is the purpose of the invention to provide an input device for the control signals for in particular ovens which provides greater flexibility than has previously been attainable and which permits a truly ergonomic approach permitting the consumer to control an apparatus which will in use become dangerously hot in places.

This obtained in a control device which is particular in that it is incorporated in the handle for the oven door, in particular in its extremities.

This construction will give the following distinct advantages over previously known constructions:

The oven cavity with its door will not need any auxiliary control panel and may hence be placed with

great flexibility within a kitchen environment takning only the ususal care with enclosing a hot environment.

All the control electronics except that which is actually controlling the supply of energy may be put in the handle along with the input devices which means that they are all in a relatively cool environment.

Contact to the control electronics may be established via connections created through the hinge which will operate both when the oven door is closed and when open. Alternatively connections may be established by the mating of contact surfaces when closing the oven door. This brings the further advantage that turning on e.g. a hot air oven is only performed when the door is closed. When the oven door is open the necessary power supply to the control electronics may be had from a rechargable battery or super capacitor also stored in the handle. In this case, the entire door may be removed without the need for separation of the electrical circuit.

By establishing contact from the input device and the control electronics to the data bus by means of an infrared link, only the power supply to the electronics in the handle must be fed by wire.

The invention will be further described with reference to the drawing, in which

Fig. 1 from the side shows an oven door in its closed position,

Fig. 2 from the side shows an oven door in its open position,

Fig. 3 shows a front view of one embodiment of the invention, and

Fig. 4 shows a second embodiment of the invention with push buttons.

In Fig. 1 is shown the front part of an oven cavity 1, being closed by an oven door 2 which is only shown schematically. Usual practice of using a double-glazed insulating construction may be adhered to. The

door is hinged by means of hinges 3, and near the top it is fitted with a bar-shaped handle 4. A push-button 5 is indicated at the visible end of the handle 4. Also indicated is an electrical connection between the handle 4 and the door frame at the spot 6 which represents a multiconductor or multipoint galvanic contact. The same features are shown at Fig. 2, only the door is open, and the galvanic connection to the spot 6 is broken. Alternatively or simultaneously, an electrical connection which is not shown may be made permanently by passing it through the hinge.

In Fig. 3 is shown that the control signal input devices on the handle 4 are rotary ends 7 and 7' of the handle extremities. The left hand rotary device 7 may control the temperature, and the right hand rotary device 7' may control the time of heating.

In Fig. 4 is shown an alternative and more elaborate disposition of the input devices, in that they are buttons 8 disposed along the lenght of the handle. Also shown is a small display 9, such as a temperature indicator. Alternatively, the display may show the status of any one button being pushed.

PATENT CLAIMS

1. A control device for the functions of an oven for the preparation of food comprising an oven cavity which may be closed by an oven door, characterized in that the control device is incorporated in the handle for the oven door, in particular in its extremities.

2. A control device according to claim 1, characterized in that all necessary control electronics is placed in the handle along with the input devices.

3. A control device according to claim 1 or 2, characterized in that contact to the control electronics is established via connections through one or both of the hinges for the door.

4. A control device according to claim 1 or 2, characterized in that connections to the control electronics are established by the mating of contact surfaces when closing the oven door.

5. A control device according to claim 4, characterized in that the necessary power supply to the control electronics in the open state of the oven door is provided by a re-chargeable battery or super-capacitor held inside the handle

6. A control device according to any of the claims 3 to 5, characterized in that communication between the input device and the control electronics occurs by means of an infrared link.

7. A control device according to any of the above claims, characterized in that the control device in the handle communicates with a data bus for the oven installation.

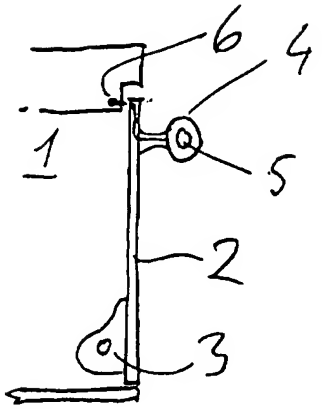

Fig. 1

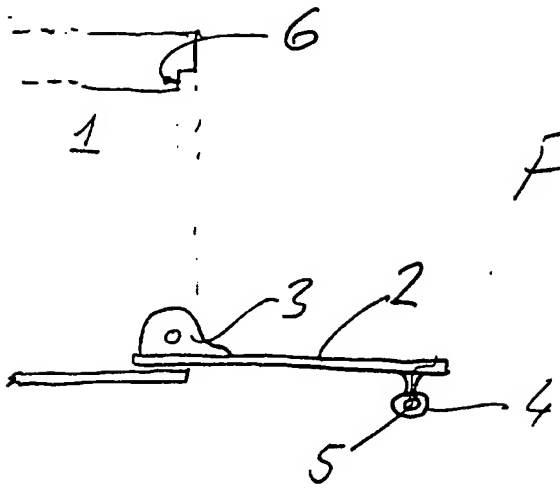

Fig. 2

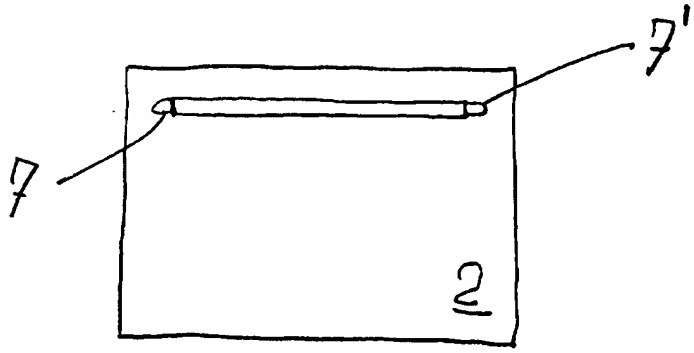

Fig. 3

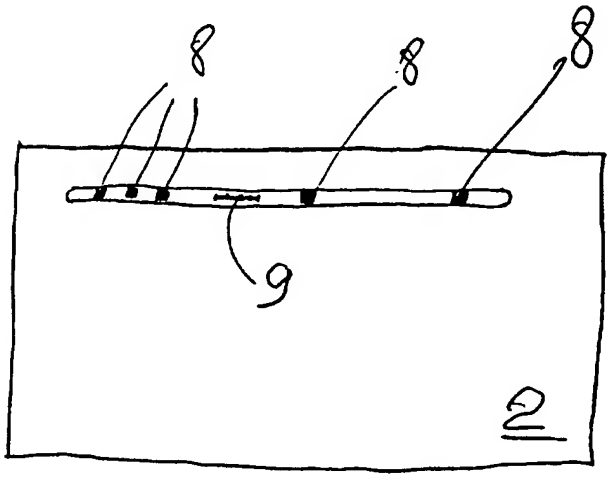

Fig. 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK 97/00027

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: F24C 7/08, F24C 15/02
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: F24C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Patent Abstracts of Japan, Vol 14,No 545, M-1054, abstract of JP,A,2-230026 (SANYO ELECTRIC CO LTD.), 12 Sept 1990 (12.09.90) --	1-3,7
X	Derwent's abstract, No 94-239969/29, week 9429, ABSTRACT OF SU, 1812392 (TULA TECHN INST), 30 April 1993 (30.04.93) --	1-3,7
X	Patent Abstracts of Japan, Vol 11,No 301, M-628, abstract of JP,A,62-91729 (MATSUSHITA ELECTRIC IND CO LTD.), 27 April 1987 (27.04.87) --	1

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X	Patent Abstracts of Japan, Vol 8,No 47, M-280, abstract of JP,A,58-200940 (MATSUSHITA DENKI SANGYO K.K.), 22 November 1983 (22.11.83) --	1
A	EP 0362130 A1 (GIGATHERM AKTIENGESELLSCHAFT), 4 April 1990 (04.04.90) --	

INTERNATIONAL SEARCH REPORT

Information on patent family members

04/03/97

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PCT/DK 97/00027

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0362130 A1	04/04/90	DE 3829913 A	15/03/90